UMETCO MINERALS CORPORATION,
(Former Electro Metallurgical
"Electromet" Company)
Niagara Falls, New York

Site Function

Manhattan Engineer District (MED) contract W-7405-Eng-14, initiated on November 14, 1942, called for the Electro Metallurgical Company (Electromet) to design, engineer, construct, and operate a plant to produce uranium metal from uranium tetrafluoride (UF_4, green salt). Expansion of the facility occurred under construction contracts W-7405-Eng-227 and 255. Electromet, a subsidiary of Union Carbide and Cargon Corporation, received UF_4 from Union Carbide's Linde Air Products Division plant at Tonawanda, New York, reacted it with magnesium in induction furnaces to convert it to uranium metal, and then recast the metal into 110- to 135-kilogram ingots. The products were generally shipped to either Hanford Engineer Works, Richland, Washington, Argonne National Laboratory, Argonne, Illinois, or Du Pont's Chambers Works, Deepwater, New Jersey, for testing, or to Simonds Saw and Steel Company, Lockport, New York, Vulcan Crucible Steel Company, Aliquippa, Pennsylvania, Revere Copper and Brass Company, Detroit, Michigan, or Joslyn Manufacturing and Supply Company, Fort Wayne, Indiana, for rolling. Process residues (dolomite slag, uranium chips, and crucible dross) were shipped to other sites for uranium recovery, storage, or disposal. These sites included the Atomic Energy Commission (AEC) portion of Lake Ontario Ordnance Works (LOOW), Lewiston, New York (now known as the Department of Energy (DOE) Niagara Falls Storage Site), Mallinckrodt Chemical Company, St. Louis, Missouri, Vitro Manufacturing Company, Canonsburg, Pennsylvania, the Du Pont Chambers Works, and Hooker Electrochemical Company, Niagara Falls, New York.

In addition to production of metal from green salt, Electromet recast scrap metal from Simonds, Chapman Valve Manufacturing Company, Indian Orchard, Massachusetts, and American Rolling Mill Company (location unknown). The contract also contained a provision for the conduct of research and development. Some work was done under this provision from April to October 1945. The exact nature of the work is not known, but it may have involved low- and/or high-grade uranium ores.

Production of uranium metal was suspended in August 1946 and resumed in October 1947. On November 30, 1948, Electromet was liquidated as a separate company and became the Electro Metallurgical Division of Union Carbide and Carbon Corporation. All rights, assets, liabilities, and contracts were transferred to Union Carbide. Production continued until September 28, 1949, when the last casting of uranium was conducted. The plant was placed in standby condition two days later.

Electromet also supplied calcium metal to Los Alamos Scientific Laboratory, Iowa State College, and AEC's Santa Fe Yards under contracts W-26-021-Eng-13, AT (30-1)-Gen-137, 160, and 225, and AT-04-1-Gen-55, 56, 57, 78, 91, and 101 (1945 to 1948). In April 1950, the UF_4-to-metal plant was reactivated for casting zirconium metal sponge into ingots for the Naval Critical Requirement program. The work was conducted under W-7405-Eng-14 and funded under AEC contract AT(30-1)-861 with Titanium Alloy Manufacturing Division of National Lead Company (supplier of the zirconium). The plant was returned to standby condition at the completion of the work in September 1950. Portions of the facility were subsequently used under contract AT-(40-1)-1090 between Union Carbide and Carbon Research Laboratories, Inc., and AEC's Oak Ridge Operations Office. This contract directed Union Carbide to conduct research and development on methods of forming metal that would minimize unnecessary machining, finishing, and waste. This work was conducted from January to June, 1951. Although the contract is not specific, the metal involved was probably uranium. Later, just prior to demolition, the building was also apparently used for titanium processing (contract number unknown). AEC involvement at the site ended when contract W-7405-Eng-14 expired on June 30, 1953.

Following the termination of the MED/AEC contracts, Electromet processed ores containing uranium and thorium for commercial use under New York State radioactive material license 950-0139. From August 1965 through April 1972, Union Carbide Corporation produced 505 tons of slag bearing 9212 pounds of thorium dioxide and 1293 pounds of uranium oxide This slag material was placed in 55-gallon drums and buried in a designated area on plant property in a hole 20 feet deep with 4 to 5 feet of soil cover.

Site Description

The Electromet site is located south of Pine Avenue and east of its intersection with Packard Road (Figure 1). The MED/AEC operations took place in only one building, a one-story cinder block and wood structure that was demolished in 1957. It was located approximately 400 feet east of 47th Street and 400 feet south of Royal Avenue, in an area now occupied by the south end of current Building 166.

Owner History

This facility was part of what is now known as Umetco Minerals Corporation, a subsidiary of Union Carbide Corporation During the MED/AEC period, the facility was called Electro Metallurgical Company, and was a subsidiary of Union Carbide's predecessor, Union Carbide and Carbon Corporation.

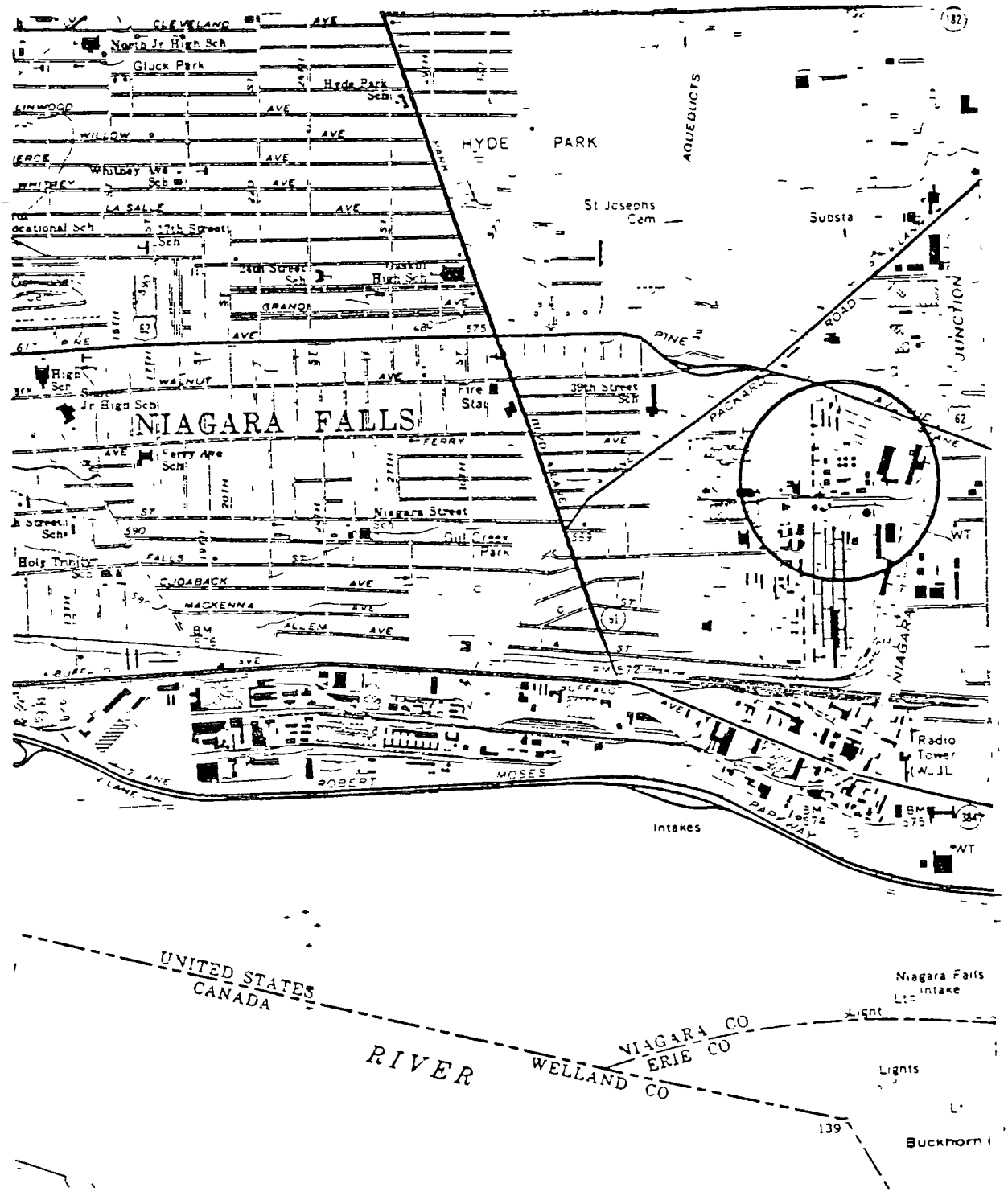


Figure 1. Location of the Former Electro Metallurgical Company in Niagara Falls, New York

Radiological History and Status

At the end of the contract, Electromet purchased the facility from AEC. The plant and equipment were decontaminated through washing, vacuuming, and in some locations, removing concrete floors and wooden platforms. The Health and Safety Division of AEC surveyed the site on August 11 and 14, 1953. Final radiological certification of the condition of the plant and a recommendation to release the facility were made on September 28, 1953. The building was later demolished with debris and uranium processing wastes transferred to the AEC portion of LOOW. In the late 1950s, the wastes from uranium processing were subsequently sent to Oak Ridge National Laboratory (ORNL) for permanent disposal. However, some of the rubble may have been deposited in the old Union Carbide dump (200 to 300 acres located north of Pine Avenue and owned by Newco, now CECOS International, Inc.).

On August 24, 1976, personnel from ORNL and the DOE (then the Energy Research and Development Administration) Oak Ridge Operations Office conducted a screening survey of the site and the old dump. Due to the near-background radiation levels encountered over most of the site, a comprehensive formal survey was not recommended. However, because of elevated (but within guidelines*) beta-gamma readings in the area between Buildings 163 and 166, additional measurements and soil sampling were advised. EG&G, Inc., conducted an aerial radiological survey of the Niagara Falls area in November 1978, and again with more sensitive instruments in September 1979. No radiation anomalies were observed on the Electromet site during either survey.

As a follow-up to the screening survey, ORNL personnel conducted another limited radiological survey on September 24, 1980. They found relatively high concentrations of gamma-emitting radionuclides (above guidelines*) in the thorium-232 and uranium-238 decay chains in the surface soil around Buildings 166 and 163 as well as elsewhere on the site. Residual radioactivity was also identified in cracks and seams in the walls and floor of Building 163. Thorium-bearing ores were used during operations at this site, however, the activities were unrelated to the MED/AEC work. The uranium-238/radium-226 ratio measured in the soil samples indicates natural uranium, whereas the MED/AEC uranium work involved work with uranium metal, i.e., produced after the uranium was separated from its daughters. Thus, the observed uranium contamination was apparently not the result of the MED/AEC conversion and metal-casting operations.

---

*U.S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites, Rev. 1, July 1985.

Because the radioactivity at the UCC site is unrelated to MED/AEC work, DOE has determined that it has no authority under the Atomic Energy Act of 1954, as amended, to conduct any further activities at the Union Carbide Corporation site. The site has been eliminated from consideration for inclusion in the Formerly Utilized Sites Remedial Action Program. A final elimination report was completed in November 1985. As per DOE policy the Environmental Protection Agency and the State of New York have been notified of DOE's action so that they may take whatever action, if any, they deem appropriate.

UC 149 2

INTERNAL CORRESPONDENCE

METALS DIVISION

P O BOX 579 4625 ROYAL AVE , NIAGARA FALLS, NEW YORK 14

To (Name) Dr. S. G. Austin
Division UCC Medical Dept.
Location 4th Floor
270 Park Avenue
New York, NY 10017

Copy to Mr. R. L. Folkman

Date May 20, 1981

Originating Dept MINERALS TECHNOLOGY

Answering letter date

Subject Metals Division Uranium Production Workers 1943-1949

The Area Plant at the Union Carbide Niagara Works was initiated by U.S. Government Construction Contract W-7405-ENG-14 with Electromet on November 14, 1942 (Exhibit I, page 137). Construction of the actual manufacturing building, Building 162, began on January 5, 1943. Contracts W-7405-ENG-227 and W-7403-ENG-255 were initiated on March 1, 1943, and production operations commenced on April 1, 1943. Uranium tetrafluoride (UF_4), produced at Linde, was converted in the Area Plant to uranium metal and recast into ingots. This metal eventually was refabricated by others into natural uranium fuel elements (slugs), clad with aluminum, and used to fuel the air cooled graphite reactor at Clinton Laboratories in Oak Ridge and the plutonium production reactors at Hanford, Washington, for which the Oak Ridge reactor was a prototype. Clinton Laboratories was originally administered by the University of Chicago and Hanford by the DuPont Corporation DuPont personnel were trained at Oak Ridge prior to the initiation of the Hanford reactors.

The Niagara operations were contained in two buildings, the so-called Area Plant, Building 162, which was demolished in 1957, and an adjacent building, still standing, later called the maintenance building and is identified as Building 163 Maintenance department activities were conducted in Building 163 until 1974 when the maintenance department moved into a renovated basement in Building 94. Building 163 is used for storage and a chemical pilot operation on silica metal purification was conducted there in 1975 The site of the demolished Area Plant is now the location of a research building housing the bulk of alloy research laboratories and office space now identified as Building 166. Exhibit II shows the Area Plant and adjacent maintenance building in 1954

The "construction" contract, W-7405-ENG-14, with the government was closed out on November 27, 1953. Decommissioning and decontamination were formally begun early in 1953 and the plant equipment was being dismantled in the summer of 1953 (Exhibit III, page 3) It should be stressed that contract W-7405-ENG-14 has been assumed by me to be a "construction" contract since the decontamination of the building refers to that contract The contents of the two later contracts are not formally known but it can again be assumed that they were related to production because they were initiated one month prior to the start of production on April 1, 1943. There is no formal record at Niagara of the actual termination date of the "production" contracts.

The Area Plant buildings were considered decontaminated on November 9, 1953 (Exhibit III, page 9) and the property was released to Electromet for other uses.

It is obvious that the date of the production cutoff is not known with any certainty. A poll of the remaining Area Plant workers gives as many cutoff dates as the people asked, indicating that personal recollections cannot be depended upon. It is known that following the uranium production cutoff date zirconium was processed in the building. One source says it was post 1946 and zirconium production occurred in 1947 and 1948 (Exhibit III, page 1). The next solid reference is the in-house publication, the TAPPING POT, which stated in April 1948 that work was difficult because the carpenters were busy in the building; then in June 1948 the plant is reported as reopening. So the only thing we can be sure of is that sometime between January 1, 1946, and April 1948, uranium production was suspended. It is probable, from personal recollections, that uranium production ceased sometime around January 1947. An absolute date on the cessation of the production contract, that is not available at Niagara, would probably pinpoint this date. It may be available from the Law Department or Corporate records.

The Area Plant, Building 162, was finally demolished and disposed of by means acceptable to the AEC in 1957 prior to the construction of Building 166. The demolition procedure was dated March 16, 1957. The attached correspondence indicates that equipment, exhaust fans, building structural members, ducts, etc., were still contaminated (Exhibit IV). It seems to be possible that between the cessation of uranium production and the demolition of the building, a moderate radioactive exposure hazard existed for the occupants of the building and much less so for adjacent areas of the plant. Many of the people in our present organization, including our Senior Vice-President, had their first offices in this building when they were young research engineers between 1947 and 1957. So much for the history of the building.

We do not have any employee records at Niagara prior to 1960. However, beginning in 1943, the in-house publication TAPPING POT contained many references to the social activities of Area Plant personnel. The correspondent for the Area Plant published a column called Area Emanations, an obvious reference to radioactive emanations and probably a breach of security which escaped the dull minds of the Army security people.

The first reference to the Area Plant in the TAPPING POT was the aforementioned news article that construction had begun on January 5, 1943. The April 1943 edition listed six members of the newly appointed Area Plant staff. The next reference is August 1943 and from then on, with occasional two-month lapses, the publication is a gossipy source of information up to and including December 1945. After VJ day, on October 2, 1945, an Army-Navy E award was presented to Electromet for its contribution to the war effort. Members of the Area Plant received certificates and pins and attended the award ceremony (Exhibit V, VI, and VII). This was reported in November 1945 and it is certain that all Area Plant workers then knew the nature of their activities and that they had been handling natural uranium with its associated then known radioactive hazards. With the war's end, interest in publishing Area Emanations ceased and there were only four brief references in 1946 and 1947 until the publication of the Plant's reopening in June 1948. After that date there was a brief flurry of Area Emanations activity. In 1946 and 1947 the TAPPING POT only contributed a score of new names to the Area Plant cast of characters. We have examined all the TAPPING POTS in this period and hereby transmit to you the list of employees mentioned as workers in the Area Plant with a reference to the first date their names are mentioned.

This is the best that we can do at the local level. There are 162 employees listed prior to January 1, 1946, and 31 additional employees prior to September 1949, when the publications essentially stopped, for a total of 193 employees.

My inquiries to former Area Plant employees in the past month have positively proven the fact that you can't trust anyone's memory for facts and dates over thirty years ago.

R. J. Klotzbach

RJK:cjb
Attachments

Umetco Minerals Corporation

INTERNAL CORRESPONDENCE

PO BOX 579 4625 ROYAL AVENUE • NIAGARA FALLS NEW YORK 14302

To (Name) Messrs
F. Y McMillen
Division D G. Millenbruch
Danbury, CT 06817

Location

Area

Copy to File

Date May 2, 1986

Originating Dept Niagara Falls, NY

Area

Answering Letter Date

Subject

The Department of Energy has written George Parker, as the representative of Umetco, informing him that the Niagara Site is no longer to be included in the "Formerly Utilized Sites Remedial Action Program" and that they "are notifying the Environmental Protection Agency and the State of New York of this action . ."

This should be of little concern to us at this time because of the extensive clean-up of the Technology Site over the past few years However, one of the enclosures with their letter contains a good summary of the radiological history of our site I thought you might find it interesting so I am forwarding the package for your leisure reading

D. J Hansen

DJH/dv/366h
Enclosure

Based on the descriptions herein, the site sounds like the current Alkem site.

5-6-96

UCCNHT0000193

UMETCO MINERALS CORPORATION,
(Former Electro Metallurgical
"Electromet" Company)
Niagara Falls, New York

Site Function

Manhattan Engineer District (MED) contract W-7405-Eng-14, initiated on November 14, 1942, called for the Electro Metallurgical Company (Electromet) to design, engineer, construct, and operate a plant to produce uranium metal from uranium tetrafluoride (UF_4, green salt). Expansion of the facility occurred under construction contracts W-7405-Eng-227 and 255. Electromet, a subsidiary of Union Carbide and Cargon Corporation, received UF_4 from Union Carbide's Linde Air Products Division plant at Tonawanda, New York, reacted it with magnesium in induction furnaces to convert it to uranium metal, and then recast the metal into 110- to 135-kilogram ingots. The products were generally shipped to either Hanford Engineer Works, Richland, Washington, Argonne National Laboratory, Argonne, Illinois, or Du Pont's Chambers Works, Deepwater, New Jersey, for testing, or to Simonds Saw and Steel Company, Lockport, New York, Vulcan Crucible Steel Company, Aliquippa, Pennsylvania, Revere Copper and Brass Company, Detroit, Michigan, or Joslyn Manufacturing and Supply Company, Fort Wayne, Indiana, for rolling. Process residues (dolomite slag, uranium chips, and crucible dross) were shipped to other sites for uranium recovery, storage, or disposal. These sites included the Atomic Energy Commission (AEC) portion of Lake Ontario Ordnance Works (LOOW), Lewiston, New York (now known as the Department of Energy (DOE) Niagara Falls Storage Site), Mallinckrodt Chemical Company, St. Louis, Missouri, Vitro Manufacturing Company, Canonsburg, Pennsylvania, the Du Pont Chambers Works, and Hooker Electrochemical Company, Niagara Falls, New York.

In addition to production of metal from green salt, Electromet recast scrap metal from Simonds, Chapman Valve Manufacturing Company, Indian Orchard, Massachusetts, and American Rolling Mill Company (location unknown). The contract also contained a provision for the conduct of research and development. Some work was done under this provision from April to October 1945. The exact nature of the work is not known, but it may have involved low- and/or high-grade uranium ores.

Production of uranium metal was suspended in August 1946 and resumed in October 1947. On November 30, 1948, Electromet was liquidated as a separate company and became the Electro Metallurgical Division of Union Carbide and Carbon Corporation. All rights, assets, liabilities, and contracts were transferred to Union Carbide. Production continued until September 28, 1949, when the last casting of uranium was conducted. The plant was placed in standby condition two days later.

Electromet also supplied calcium metal to Los Alamos Scientific Laboratory, Iowa State College, and AEC's Santa Fe Yards under contracts W-26-021-Eng-13, AT (30-1)-Gen-137, 160, and 225, and AT-04-1-Gen-55, 56, 57, 78, 91, and 101 (1945 to 1948). In April 1950, the UF_4-to-metal plant was reactivated for casting zirconium metal sponge into ingots for the Naval Critical Requirement program. The work was conducted under W-7405-Eng-14 and funded under AEC contract AT(30-1)-861 with Titanium Alloy Manufacturing Division of National Lead Company (supplier of the zirconium). The plant was returned to standby condition at the completion of the work in September 1950. Portions of the facility were subsequently used under contract AT-(40-1)-1090 between Union Carbide and Carbon Research Laboratories, Inc., and AEC's Oak Ridge Operations Office. This contract directed Union Carbide to conduct research and development on methods of forming metal that would minimize unnecessary machining, finishing, and waste. This work was conducted from January to June, 1951. Although the contract is not specific, the metal involved was probably uranium. Later, just prior to demolition, the building was also apparently used for titanium processing (contract number unknown). AEC involvement at the site ended when contract W-7405-Eng-14 expired on June 30, 1953.

Following the termination of the MED/AEC contracts, Electromet processed ores containing uranium and thorium for commercial use under New York State radioactive material license 950-0139. From August 1965 through April 1972, Union Carbide Corporation produced 505 tons of slag bearing 9212 pounds of thorium dioxide and 1293 pounds of uranium oxide. This slag material was placed in 55-gallon drums and buried in a designated area on plant property in a hole 20 feet deep with 4 to 5 feet of soil cover.

Site Description

The Electromet site is located south of Pine Avenue and east of its intersection with Packard Road (Figure 1). The MED/AEC operations took place in only one building, a one-story cinder block and wood structure that was demolished in 1957. It was located approximately 400 feet east of 47th Street and 400 feet south of Royal Avenue, in an area now occupied by the south end of current Building 166.

Owner History

This facility was part of what is now known as Umetco Minerals Corporation, a subsidiary of Union Carbide Corporation. During the MED/AEC period, the facility was called Electro Metallurgical Company, and was a subsidiary of Union Carbide's predecessor, Union Carbide and Carbon Corporation.

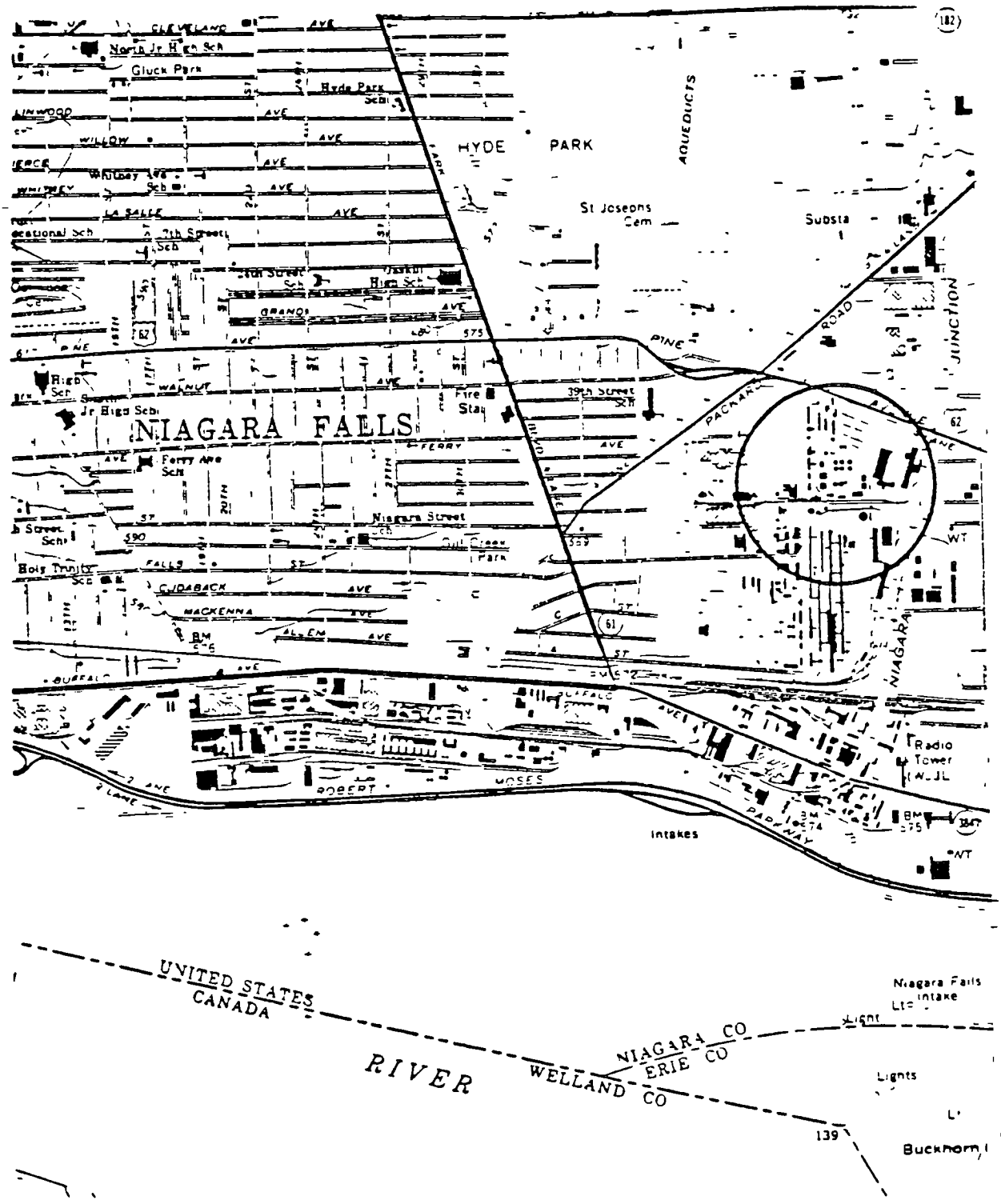


Figure 1. Location of the Former Electro Metallurgical Company in Niagara Falls, New York

Radiological History and Status

At the end of the contract, Electromet purchased the facility from AEC. The plant and equipment were decontaminated through washing, vacuuming, and in some locations, removing concrete floors and wooden platforms. The Health and Safety Division of AEC surveyed the site on August 11 and 14, 1953. Final radiological certification of the condition of the plant and a recommendation to release the facility were made on September 28, 1953. The building was later demolished with debris and uranium processing wastes transferred to the AEC portion of LOOW. In the late 1950s, the wastes from uranium processing were subsequently sent to Oak Ridge National Laboratory (ORNL) for permanent disposal. However, some of the rubble may have been deposited in the old Union Carbide dump (200 to 300 acres located north of Pine Avenue and owned by Newco, now CECOS International, Inc.).

On August 24, 1976, personnel from ORNL and the DOE (then the Energy Research and Development Administration) Oak Ridge Operations Office conducted a screening survey of the site and the old dump. Due to the near-background radiation levels encountered over most of the site, a comprehensive formal survey was not recommended. However, because of elevated (but within guidelines*) beta-gamma readings in the area between Buildings 163 and 166, additional measurements and soil sampling were advised. EG&G, Inc., conducted an aerial radiological survey of the Niagara Falls area in November 1978, and again with more sensitive instruments in September 1979. No radiation anomalies were observed on the Electromet site during either survey.

As a follow-up to the screening survey, ORNL personnel conducted another limited radiological survey on September 24, 1980. They found relatively high concentrations of gamma-emitting radionuclides (above guidelines*) in the thorium-232 and uranium-238 decay chains in the surface soil around Buildings 166 and 163 as well as elsewhere on the site. Residual radioactivity was also identified in cracks and seams in the walls and floor of Building 163. Thorium-bearing ores were used during operations at this site, however, the activities were unrelated to the MED/AEC work. The uranium-238/radium-226 ratio measured in the soil samples indicates natural uranium, whereas the MED/AEC uranium work involved work with uranium metal, i.e., produced after the uranium was separated from its daughters. Thus, the observed uranium contamination was apparently not the result of the MED/AEC conversion and metal-casting operations.

---

*U.S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites, Rev. 1, July 1985.

Because the radioactivity at the UCC site is unrelated to MED/AEC work, DOE has determined that it has no authority under the Atomic Energy Act of 1954, as amended, to conduct any further activities at the Union Carbide Corporation site. The site has been eliminated from consideration for inclusion in the Formerly Utilized Sites Remedial Action Program. A final elimination report was completed in November 1985. As per DOE policy the Environmental Protection Agency and the State of New York have been notified of DOE's action so that they may take whatever action, if any, they deem appropriate.

Umetco Minerals Corporation

INTERNAL CORRESPONDENCE

PO BOX 579 4625 ROYAL AVENUE • NIAGARA FALLS NEW YORK 14302

To (Name) Messrs.
F. V. McMillen
D. G. Millenbruch
Division Danbury, CT 06817

Location

Area

Copy to File

Date May 2, 1986

Originating Dept. Niagara Falls, NY

Area

Answering Letter Date

Subject

The Department of Energy has written George Parker, as the representative of Umetco, informing him that the Niagara Site is no longer to be included in the "Formerly Utilized Sites Remedial Action Program" and that they "are notifying the Environmental Protection Agency and the State of New York of this action . . ."

This should be of little concern to us at this time because of the extensive clean-up of the Technology Site over the past few years. However, one of the enclosures with their letter contains a good summary of the radiological history of our site I thought you might find it interesting so I am forwarding the package for your leisure reading

Don

D. J. Hansen

DJH/dv/366h
Enclosure

UMETCO MINERALS CORPORATION,
(Former Electro Metallurgical
"Electromet" Company)
Niagara Falls, New York

Site Function

Manhattan Engineer District (MED) contract W-7405-Eng-14, initiated on November 14, 1942, called for the Electro Metallurgical Company (Electromet) to design, engineer, construct, and operate a plant to produce uranium metal from uranium tetrafluoride (UF_4, green salt). Expansion of the facility occurred under construction contracts W-7405-Eng-227 and 255. Electromet, a subsidiary of Union Carbide and Cargon Corporation, received UF_4 from Union Carbide's Linde Air Products Division plant at Tonawanda, New York, reacted it with magnesium in induction furnaces to convert it to uranium metal, and then recast the metal into 110- to 135-kilogram ingots. The products were generally shipped to either Hanford Engineer Works, Richland, Washington, Argonne National Laboratory, Argonne, Illinois, or Du Pont's Chambers Works, Deepwater, New Jersey, for testing, or to Simonds Saw and Steel Company, Lockport, New York, Vulcan Crucible Steel Company, Aliquippa, Pennsylvania, Revere Copper and Brass Company, Detroit, Michigan, or Joslyn Manufacturing and Supply Company, Fort Wayne, Indiana, for rolling. Process residues (dolomite slag, uranium chips, and crucible dross) were shipped to other sites for uranium recovery, storage, or disposal. These sites included the Atomic Energy Commission (AEC) portion of Lake Ontario Ordnance Works (LOOW), Lewiston, New York (now known as the Department of Energy (DOE) Niagara Falls Storage Site), Mallinckrodt Chemical Company, St. Louis, Missouri, Vitro Manufacturing Company, Canonsburg, Pennsylvania, the Du Pont Chambers Works, and Hooker Electrochemical Company, Niagara Falls, New York.

In addition to production of metal from green salt, Electromet recast scrap metal from Simonds, Chapman Valve Manufacturing Company, Indian Orchard, Massachusetts, and American Rolling Mill Company (location unknown). The contract also contained a provision for the conduct of research and development. Some work was done under this provision from April to October 1945. The exact nature of the work is not known, but it may have involved low- and/or high-grade uranium ores.

Production of uranium metal was suspended in August 1946 and resumed in October 1947. On November 30, 1948, Electromet was liquidated as a separate company and became the Electro Metallurgical Division of Union Carbide and Carbon Corporation. All rights, assets, liabilities, and contracts were transferred to Union Carbide. Production continued until September 28, 1949, when the last casting of uranium was conducted. The plant was placed in standby condition two days later.

Electromet also supplied calcium metal to Los Alamos Scientific Laboratory, Iowa State College, and AEC's Santa Fe Yards under contracts W-26-021-Eng-13, AT (30-1)-Gen-137, 160, and 225, and AT-04-1-Gen-55, 56, 57, 78, 91, and 101 (1945 to 1948). In April 1950, the UF_4-to-metal plant was reactivated for casting zirconium metal sponge into ingots for the Naval Critical Requirement program. The work was conducted under W-7405-Eng-14 and funded under AEC contract AT(30-1)-861 with Titanium Alloy Manufacturing Division of National Lead Company (supplier of the zirconium). The plant was returned to standby condition at the completion of the work in September 1950. Portions of the facility were subsequently used under contract AT-(40-1)-1090 between Union Carbide and Carbon Research Laboratories, Inc., and AEC's Oak Ridge Operations Office. This contract directed Union Carbide to conduct research and development on methods of forming metal that would minimize unnecessary machining, finishing, and waste. This work was conducted from January to June, 1951. Although the contract is not specific, the metal involved was probably uranium. Later, just prior to demolition, the building was also apparently used for titanium processing (contract number unknown). AEC involvement at the site ended when contract W-7405-Eng-14 expired on June 30, 1953.

Following the termination of the MED/AEC contracts, Electromet processed ores containing uranium and thorium for commercial use under New York State radioactive material license 950-0139. From August 1965 through April 1972, Union Carbide Corporation produced 505 tons of slag bearing 9212 pounds of thorium dioxide and 1293 pounds of uranium oxide. This slag material was placed in 55-gallon drums and buried in a designated area on plant property in a hole 20 feet deep with 4 to 5 feet of soil cover.

Site Description

The Electromet site is located south of Pine Avenue and east of its intersection with Packard Road (Figure 1). The MED/AEC operations took place in only one building, a one-story cinder block and wood structure that was demolished in 1957. It was located approximately 400 feet east of 47th Street and 400 feet south of Royal Avenue, in an area now occupied by the south end of current Building 166.

Owner History

This facility was part of what is now known as Umetco Minerals Corporation, a subsidiary of Union Carbide Corporation. During the MED/AEC period, the facility was called Electro Metallurgical Company, and was a subsidiary of Union Carbide's predecessor, Union Carbide and Carbon Corporation.

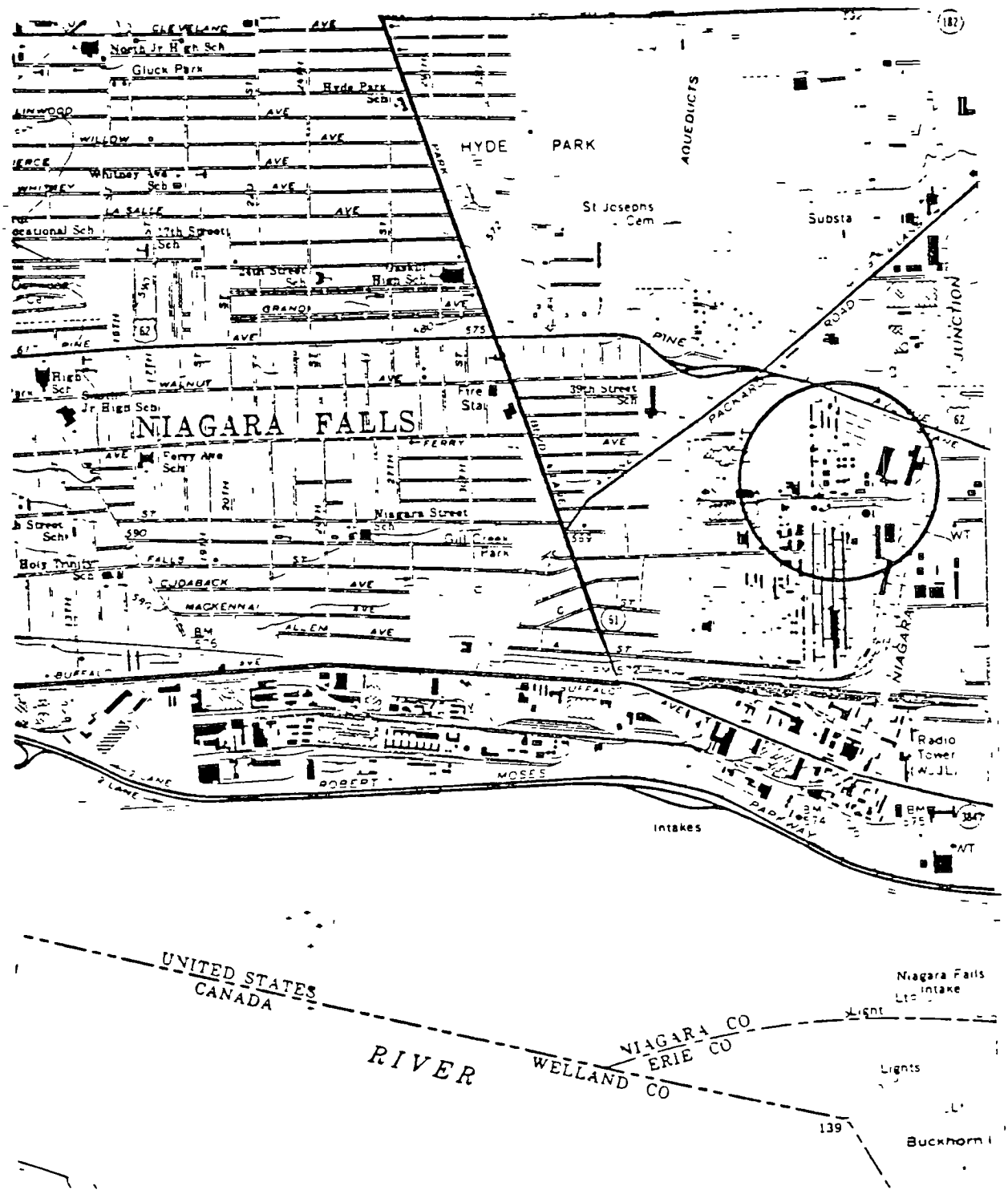


Figure 1. Location of the Former Electro Metallurgical Company in Niagara Falls, New York

Radiological History and Status

At the end of the contract, Electromet purchased the facility from AEC. The plant and equipment were decontaminated through washing, vacuuming, and in some locations, removing concrete floors and wooden platforms. The Health and Safety Division of AEC surveyed the site on August 11 and 14, 1953. Final radiological certification of the condition of the plant and a recommendation to release the facility were made on September 28, 1953. The building was later demolished with debris and uranium processing wastes transferred to the AEC portion of LOOW. In the late 1950s, the wastes from uranium processing were subsequently sent to Oak Ridge National Laboratory (ORNL) for permanent disposal. However, some of the rubble may have been deposited in the old Union Carbide dump (200 to 300 acres located north of Pine Avenue and owned by Newco, now CECOS International, Inc.).

On August 24, 1976, personnel from ORNL and the DOE (then the Energy Research and Development Administration) Oak Ridge Operations Office conducted a screening survey of the site and the old dump. Due to the near-background radiation levels encountered over most of the site, a comprehensive formal survey was not recommended. However, because of elevated (but within guidelines*) beta-gamma readings in the area between Buildings 163 and 166, additional measurements and soil sampling were advised. EG&G, Inc., conducted an aerial radiological survey of the Niagara Falls area in November 1978, and again with more sensitive instruments in September 1979. No radiation anomalies were observed on the Electromet site during either survey.

As a follow-up to the screening survey, ORNL personnel conducted another limited radiological survey on September 24, 1980. They found relatively high concentrations of gamma-emitting radionuclides (above guidelines*) in the thorium-232 and uranium-238 decay chains in the surface soil around Buildings 166 and 163 as well as elsewhere on the site. Residual radioactivity was also identified in cracks and seams in the walls and floor of Building 163. Thorium-bearing ores were used during operations at this site, however, the activities were unrelated to the MED/AEC work. The uranium-238/radium-226 ratio measured in the soil samples indicates natural uranium, whereas the MED/AEC uranium work involved work with uranium metal, i.e., produced after the uranium was separated from its daughters. Thus, the observed uranium contamination was apparently not the result of the MED/AEC conversion and metal-casting operations.

---

*U.S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites, Rev. 1, July 1985.

Because the radioactivity at the UCC site is unrelated to MED/AEC work, DOE has determined that it has no authority under the Atomic Energy Act of 1954, as amended, to conduct any further activities at the Union Carbide Corporation site. The site has been eliminated from consideration for inclusion in the Formerly Utilized Sites Remedial Action Program. A final elimination report was completed in November 1985. As per DOE policy the Environmental Protection Agency and the State of New York have been notified of DOE's action so that they may take whatever action, if any, they deem appropriate.

STATE OF NEW YORK
DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
TWO WORLD TRADE CENTER
NEW YORK, N Y 10047

FFT-CRA

March 16, 1981

Address Reply to:
Radiological Health Unit

Union Carbide Corporation
Metals Division
Electro Metallurgical
"Electomet Company
137-47 Street
Niagara Falls, New York 14302

Attention: Vice President

Dear Sir:

I am enclosing a Summary Report of radiological survey conducted by the U.S. Department of Energy at your facility. This summary is part of a document entitled "A Background Report for the Formerly Utilized Manhattan Engineer District/Atomic Energy Commission Sites Program" (DOE-EV-0097).

Please be aware that all use and transfer of radioactive materials within New York State at industrial installations must be conducted in accord with the Radiological Standards in Industrial Code Rule 38. A copy of which is enclosed for your information.

You can contact the Radiation Safety Officer at your facility for further information on this matter. Also, if you require additional information on the Department of Energy Survey or further action to be taken at your sites by DOE, you can contact Dr. William E. Mott, Director at the address given below.

Very truly yours,

F.J. Bradley, Ph.D.
Principal Radiophysicist

FJB:bd

Enclosure

cc: William E. Mott, Director
Environmental and Safety
Engineering Division
Office of Environment
Department of Energy
Washington, DC 20545

cc: J. Spath

LH 6 (9-72)

UNION CARBIDE CORPORATION, METALS DIVISION
(Electro Metallurgical "Electromet" Company)
Niagara Falls, New York

Site Function

This facility received uranium tetrafluoride (UF_4) from the Linde plant at Tonawanda, reacted it in induction furnaces to convert it to uranium metal, and then recast it into 110- to 135-kilogram ingots. Contract W-7405-Eng-14 was initiated with Electromet on November 14, 1942, and W-7405-Eng-227 and W-7403-Eng-255 were initiated on March 1, 1943. Contract W-7405-Eng-14 closed out with Amendment 28 on November 27, 1953. Process residues (dolomite slag, uranium chips, and crucible dross) were shipped to other sites for uranium recovery. The specific sites are not known. Other waste from the operation was sent to the Atomic Energy Commission portion of the Lake Ontario Ordnance Works (now known as the Department of Energy Niagara Falls Storage Site).

The uranium tetrafluoride building was also used for zirconium processing and later, just prior to demolition, for titanium processing. In addition, following the termination of the Atomic Energy Commission contracts, uranium and thorium ores were processed for commercial use under New York State Radioactive Material license 950-0139. From August 1965 through April 1972, Union Carbide produced 505 tons of slag bearing 9212 pounds of thorium dioxide and 1293 pounds of uranium oxide. This slag material was placed in 55-gallon drums and buried in a designated area on plant property in a hole 20 feet deep with 4 to 5 feet of soil cover.

Site Description

The Electromet site is located south of Pine Avenue and east of its intersection with Packard Road. The Manhattan Engineer District and Atomic Energy Commission operations took place in only one building, a cinder block and wood structure that was demolished in 1957. It was located in an area now occupied by the south end of a building designated as Building 166.

Owner History

This facility was part of what is now known as the Metals Division of the Union Carbide Corporation. During the Manhattan Engineer District and Atomic Energy Commission period, the facility was called the Electro Metallurgical Company, a Division of Union Carbide and Carbon Corporation.

Radiological History and Status

At the end of the Atomic Energy Commission and Electromet contract, the facilities were sold to the contractor. The plant and equipment were decontaminated through washing, vacuuming, and, in some locations,

removing concrete floors and wood platforms. Final radiological certification of the condition of the plant and a recommendation to release the facility were made on September 28, 1953. The building was later demolished. Demolition debris and uranium processing wastes were transferred to the Atomic Energy Commission portion of the Lake Ontario Ordnance Works, now known as the Department of Energy Niagara Falls Storage Site. In the late 1950s, the wastes from uranium processing were subsequently sent to Oak Ridge National Laboratory for permanent disposal. However, some of the rubble may have been deposited in the old Union Carbide dump (200 to 300 acres located north of Pine Avenue and owned by Newco, now CECOS International, Inc.). Additional investigations are being performed to verify the disposition of this waste.

On August 24, 1976, personnel from Oak Ridge National Laboratory and Oak Ridge Operations Office conducted a screening survey of the site and the old dump. Due to the near background radiation levels encountered, a comprehensive formal survey was not recommended. Further measurements and soil samples will be taken between Buildings 163 and 166 to ensure that no significant residual radioactive material remains in this area. An aerial radiological survey of the Niagara Falls area was conducted by EG&G, Inc., in November 1978. This survey did not identify any radiation levels above guidelines* in the area of the Electromet facility. Any subsequent activity at this site will be based on an evaluation of the findings collected to date and the results of the planned measurements.

---

* Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation.

Copies: Messrs. F. L. Evans (2)
R. Job, Jr.
P. W. McDaniel
J. W. Norwood (2)
Dr. W. C. Roberts

TECHNOLOGY
DEPARTMENT

May 24, 1963

Mr. Cornelius F. Candee
New York State Department of Labor
252 Niagara Street
Buffalo 1, New York

Registration No. 0139

Dear Mr. Candee

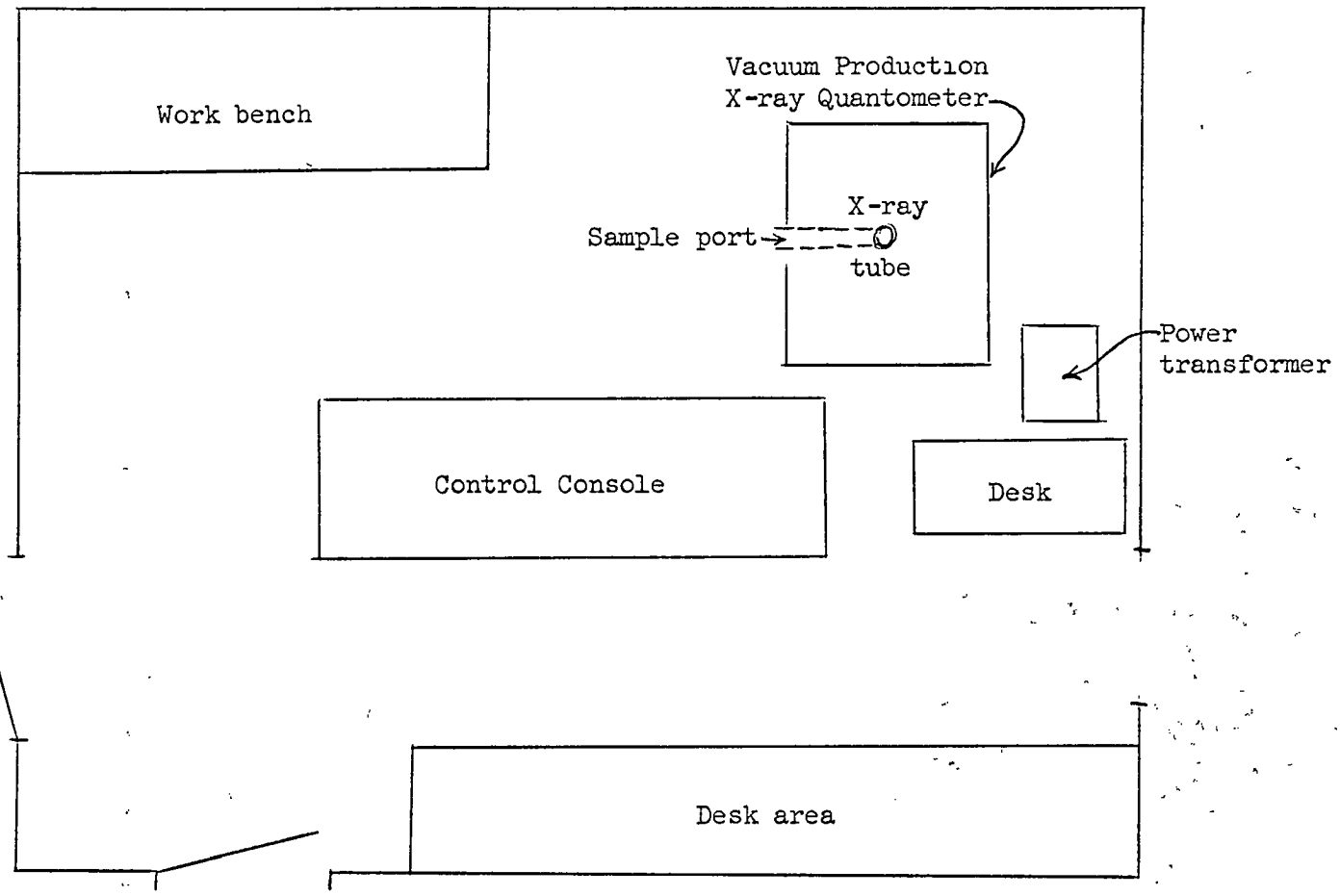
Enclosed are the tabulations of findings for exposure to radiation and radioactive materials and estimations of exposure in unrestricted areas during the processing at Union Carbide Metals Company of Porter Brothers' columbite ore containing uranium. Mr. Paul McDaniel of the Industrial Medicine and Toxicology Department of Union Carbide Corporation conducted the radiation surveys and found that exposures of personnel were much less than the maximum permissible. Exposures in unrestricted areas were also found not to be hazardous. A summary of the operation and precautions for handling the columbite are also enclosed. All the ore has been processed but no decision has yet been made about the disposal of the slag which contains the uranium. It is stored on a concrete pad, roped off, and posted with radiation warning signs. The slag is insoluble in water and poses no dust hazard.

The floor plan of the X-ray spectrographic laboratory of the Niagara Works is also enclosed. A survey of this room showed that the dose rate in areas in which the instrument operators work is less than 0.1 mr/hr. This highest area of radiation is at the closed shutter of the X-ray tube when the dose rate is 1.75 to 2.0 mr/hr. However, this area is quite inaccessible to the operator and poses no hazard.

Very truly yours,

John F. Langkau

JFL:ew
Enc.



FLOOR PLAN OF THE X-RAY SPECTROGRAPHIC LABORATORY
OF THE NIAGARA WORKS LABORATORY,
UNION CARBIDE METALS COMPANY,
NIAGARA FALLS, NEW YORK

(5/23/63)

EXHIBIT 1

STATE OF NEW YORK
DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
TWO WORLD TRADE CENTER
NEW YORK, N Y 10047

ITT-CRA

RECEIVED
MAR 26 1981
SHEA DEPT.

March 16, 1981

Address Reply to:
Radiological Health Unit

Union Carbide Corporation
Metals Division
Electro Metallurgical
"Electomet Company
137-47 Street
Niagara Falls, New York 14302

Attention: Vice President

Dear Sir:

I am enclosing a Summary Report of radiological survey conducted by the U.S. Department of Energy at your facility. This summary is part of a document entitled "A Background Peport for the Formerly Utilized Manhattan Engineer District/Atomic Energy Commission Sites Program" (DOE-EV-0097).

Please be aware that all use and transfer of radioactive materials within New York State at industrial installations must be conducted in accord with the Radiological Standards in Industrial Code Rule 38. A copy of which is enclosed for your information.

You can contact the Radiation Safety Officer at your facility for further information on this matter. Also, if you require additional information on the Department of Energy Survey or further action to be taken at your sites by DOE, you can contact Dr. William E. Mott, Director at the address given below.

Very truly yours,

F.J. Bradley, Ph.D.
Principal Radiophysicist

FJB:bd

Enclosure

cc: William E. Mott, Director
Environmental and Safety
Engineering Division
Office of Environment
Department of Energy
Washington, DC 20545

cc: J. Spath

LH 6 (9-72)

UNION CARBIDE CORPORATION, METALS DIVISION
(Electro Metallurgical "Electromet" Company)
Niagara Falls, New York

Site Function

This facility received uranium tetrafluoride (UF_4) from the Linde plant at Tonawanda, reacted it in induction furnaces to convert it to uranium metal, and then recast it into 110- to 135-kilogram ingots. Contract W-7405-Eng-14 was initiated with Electromet on November 14, 1942, and W-7405-Eng-227 and W-7403-Eng-255 were initiated on March 1, 1943. Contract W-7405-Eng-14 closed out with Amendment 28 on November 27, 1953. Process residues (dolomite slag, uranium chips, and crucible dross) were shipped to other sites for uranium recovery. The specific sites are not known. Other waste from the operation was sent to the Atomic Energy Commission portion of the Lake Ontario Ordnance Works (now known as the Department of Energy Niagara Falls Storage Site).

The uranium tetrafluoride building was also used for zirconium processing and later, just prior to demolition, for titanium processing. In addition, following the termination of the Atomic Energy Commission contracts, uranium and thorium ores were processed for commercial use under New York State Radioactive Material license 950-0139. From August 1965 through April 1972, Union Carbide produced 505 tons of slag bearing 9212 pounds of thorium dioxide and 1293 pounds of uranium oxide. This slag material was placed in 55-gallon drums and buried in a designated area on plant property in a hole 20 feet deep with 4 to 5 feet of soil cover.

Site Description

The Electromet site is located south of Pine Avenue and east of its intersection with Packard Road. The Manhattan Engineer District and Atomic Energy Commission operations took place in only one building, a cinder block and wood structure that was demolished in 1957. It was located in an area now occupied by the south end of a building designated as Building 166.

Owner History

This facility was part of what is now known as the Metals Division of the Union Carbide Corporation. During the Manhattan Engineer District and Atomic Energy Commission period, the facility was called the Electro Metallurgical Company, a Division of Union Carbide and Carbon Corporation.

Radiological History and Status

At the end of the Atomic Energy Commission and Electromet contract, the facilities were sold to the contractor. The plant and equipment were decontaminated through washing, vacuuming, and, in some locations,

removing concrete floors and wood platforms. Final radiological certification of the condition of the plant and a recommendation to release the facility were made on September 28, 1953. The building was later demolished. Demolition debris and uranium processing wastes were transferred to the Atomic Energy Commission portion of the Lake Ontario Ordnance Works, now known as the Department of Energy Niagara Falls Storage Site. In the late 1950s, the wastes from uranium processing were subsequently sent to Oak Ridge National Laboratory for permanent disposal. However, some of the rubble may have been deposited in the old Union Carbide dump (200 to 300 acres located north of Pine Avenue and owned by Newco, now CECOS International, Inc.). Additional investigations are being performed to verify the disposition of this waste.

On August 24, 1976, personnel from Oak Ridge National Laboratory and Oak Ridge Operations Office conducted a screening survey of the site and the old dump. Due to the near background radiation levels encountered, a comprehensive formal survey was not recommended. Further measurements and soil samples will be taken between Buildings 163 and 166 to ensure that no significant residual radioactive material remains in this area. An aerial radiological survey of the Niagara Falls area was conducted by EG&G, Inc., in November 1978. This survey did not identify any radiation levels above guidelines* in the area of the Electromet facility. Any subsequent activity at this site will be based on an evaluation of the findings collected to date and the results of the planned measurements.

---

* Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation.